10/065,576

PATENT – AF

☒ *OFFICIAL*
☐ *UNOFFICIAL*

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Jeffrey Remillard et al. Confirmation No.: 9752

Serial No: 10/065,576 Group Art Unit: 2857

Filed: 10/31/2002 Examiner: Tsai, Carol

Title: SYSTEM AND METHOD FOR DETERMINING AN OBJECT USING PULSED LIGHT

☒ **CERTIFICATE OF MAILING/TRANSMISSION (37 C.F.R. § 1.8(a))**

I hereby certify that this correspondence is being transmitted by facsimile to the Patent and Trademark Office Fax No: (703) 872-9306, on March 31, 2005. Total No. of Pages: 9

/David S. Bir/
David S. Bir (Reg. No. 38,383

Commissioner for Patents
P.O. Box 1450
Arlington, VA 22313-1450

APPEAL BRIEF UNDER 37 C.F.R. §41.37

Applicants submit this Appeal Brief in support of the Notice of Appeal filed March 28, 2005 appealing the final rejection of all pending claims 1, 2, 5, 6, and 11-20 for consideration by the Board of Patent Appeals and Interferences and request the final rejection of these claims be reversed and this case be remanded with instructions for passing to issuance.

(i) REAL PARTY IN INTEREST

The real party in interest for this application is the assignee, Ford Global Technologies, Inc., a Delaware limited liability company and wholly owned subsidiary of Ford Motor Company.

(ii) RELATED APPEALS AND INTERFERENCES

This application is a continuation-in-part and claims priority from U.S. Patent No. 6,429,429 and is related to co-pending and commonly owned U.S. Application S/N 10/065,579, which has also been appealed to the Board and is currently pending. Applicants and assignee are not aware of any other related appeals or proceedings which may affect the Board's decision in this appeal.

(iii) STATUS OF CLAIMS

Claims 1, 2, 5, 6, and 11-20 are currently pending in this application and have been rejected by the Examiner in the final Office Action mailed November 30, 2004. The rejection of all pending claims is being appealed.

(iv) STATUS OF AMENDMENTS

No amendment has been filed subsequent to the final rejection mailed November 30, 2004.

(v) SUMMARY OF CLAIMED SUBJECT MATTER

Applicants' claimed invention is directed to a method, system, and article of manufacture for detecting an object using emitted light pulses reflected from the object. As claimed in independent claims 1, 11, 13, 18, 19, and 20 Applicants' invention indicates presence of the object using the received reflected light pulses and adjusts sensitivity of the indicating step based on travel time of the pulses (Claim 11) or based on elapsed time from the emitted pulse(s) (all other claims). As described in paragraphs 8, 56, and 75 of the specification, for example, adjusting sensitivity based on elapsed time of the light pulse allows detection of relatively distant objects through fog. As described in paragraphs 5 and 6, prior art approaches using a low detection threshold to detect objects at a distance are subject to false detections triggered by the relatively high intensity reflection generated by fog, while approaches using a higher threshold to reduce false indications in fog can not detect objects at a distance who have a relatively lower

intensity reflection. Applicants' claimed invention addresses this problem by adjusting sensitivity to detect objects at relatively large distances while also detecting objects through fog.

(vi) GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1, 2, 5, 11, 13, and 17-20 stand rejected under 35 U.S.C. §102(b) as being anticipated by Hibino (US 5,485,155). Claims 6, 12, and 14 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Hibino in view of Laufer (US 2003/0222772. Claims 15 and 16 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Hibino (US 5,485,155) in view of Azusazawa et al. (JP 05297141).

(vii) ARGUMENT

Rejection Under 35 USC §102(b)

The Examiner rejected claims 1, 2, 5, 11, 13, and 17-20 under 35 USC §102(b) as being anticipated by US 5,485,155 to Hibino. As described above, Applicants' invention as claimed in each of these claims requires adjusting sensitivity based on an elapsed time from emission of a light pulse or based on travel time of the pulses (claim 11). As explained below, Hibino does not disclose adjusting sensitivity based on elapsed time as claimed by Applicants such that the rejection under 35 USC §102(b) should be reversed.

In contrast to Applicants' claimed invention, Hibino discloses the use of an automatic gain amplifier 13 (see Fig.1 and related description) to adjust the gain or multiplier of the received signal so that the voltage level is within the "window" voltage, i.e. between V1 and V2, as determined by window comparator 23. This allows Hibino to boost the relatively weaker reflected signal from smaller objects that may be closer (like a motorcycle) so it has a similar peak value as the signal reflected from larger objects (like a car) that may be farther away. This feature of Hibino is illustrated and explained in greater detail with reference to Fig. 3. As shown in blocks 250, 255, 260, and 265, the gain is adjusted (increased or decreased) so that Vmax is between V1 and V2. As described in Col. 7, ll. 45-50, "In other words, these steps 250-270 realizes AGC (automatic gain control) so as to adjust the gain of the variable gain amplifier 13 to satisfy a relation V1<Vmax<V2." There is no disclosure of adjusting sensitivity (by increasing or decreasing the gain in this case) based on elapsed time from the emission or elapsed travel time

of the emitted pulse as disclosed and claimed by Applicants so Hibino does not anticipate Applicants' claimed invention and the rejection based on Hibino is improper and should be reversed.

The only reference to elapsed time in Hibino refers to the three (3)- 16 msec intervals, shown and described with reference to Fig. 6, which are used to alternate measurements between the AGC measurement and the full gain measurement with the third interval used to calculate the distance. As illustrated in Fig. 6, the gain is constant for the full gain measurement intervals (t11-t22 and t44-t55) and clearly does not anticipate Applicant's claimed invention which includes adjusting sensitivity of the indicating step based on elapsed time. While Hibino teaches adjusting the gain during the AGC measurement intervals (t22-t33, t55-t66), the gain (one way to adjust sensitivity) is adjusted so that Vmax is between V1 and V2 as described above, and not based on the elapsed time as disclosed and claimed by Applicants. Assuming, for purposes of argument that the gain in Hibino were based on elapsed time as the Examiner contends rather than on maintaining the signal level Vmax between V1 and V2 as actually disclosed, the varying gain illustrated in interval t22-t33 of Figure 6 would have the same profile as the varying gain illustrated in interval t55-t66 (although this interval is not labeled in the Figure, it is the second "AGC" interval that occurs after the time labeled t44 in the Figure). This is clearly not the case because Hibino varies the gain based on the voltages levels of V1 and V2 and NOT based on elapsed time as disclosed and claimed by Applicants.

For the reasons stated above, Applicants respectfully submit that Hibino fails to anticipate Applicants' claims and requests that the rejection of claims 1, 2, 5, 11, 13, and 17-20 be reversed.

Rejections Under 35 U.S.C. §103(a)

The Examiner rejected claims 6, 8, 10, 12, and 14-16 under 35 USC §103(a) as being unpatentable over the primary reference of US 5,485,155 to Hibino in view of US 2003/0222772 to Laufer, and JP 05297141 to Azusazawa et al. As stated above and incorporated here by reference, the primary reference of Hibino fails to disclose adjusting sensitivity based on elapsed time as disclosed and claimed by Applicants. Because the Examiner relies on Hibino as the primary reference in each of the obviousness rejections, and the secondary references of Laufer and Azusazawa et al. also fail to disclose or suggest this feature, the proposed combinations fail to teach or suggest all the features of Applicant's claimed invention and the rejection of claims 6, 8, 10, 12, and 14-16 under 35 USC §103(a) should be reversed for this reason alone.

The Examiner has also failed to make a prima facie case of obviousness in rejecting claims 6, 8, 10, 12, and 14-16 under 35 U.S.C. §103(a) for the following additional reasons. There is no motivation, teaching, or suggestion to combine the references as proposed by the Examiner in rejecting the claims in that neither reference recognizes the problems identified by Applicants and solved by the claimed invention. There has been no proper showing of obvious in combining the primary reference, US 5,485,155 to Hibino, with either of the secondary references, US 2003/0222772 to Laufer or JP 05297141 to Azusazawa et al.. First, there is no suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify or combine the disclosure of Hibino with those of Laufer or Azusazawa without impermissible use of the teachings of Applicants' disclosure. Second, the Examiner has not identified a reasonable expectation of success of the proposed combinations. Finally, the proposed combinations fail to teach or suggest all the claim limitations of the rejected claims with respect to adjusting sensitivity based on elapsed time as described above.

For the reasons above, Applicants respectfully request the rejection of claims 6, 8, 10, 12 and 14-16 under 35 USC §103(a) be reversed.

(viii) CLAIMS APPENDIX

1. (Original) A method for detecting an object, comprising:
emitting a light pulse;
receiving a reflection of said light pulse;
indicating a presence of the object from said received light pulse; and,
adjusting sensitivity of said indicating step based on an elapsed time from said emission.

2. (Original) The method of claim 1 wherein said adjusting step increasing said sensitivity as said elapsed time from said emission increases.

3-4 (Cancelled).

5. (Original) The method of claim 1 wherein sensitivity has a first sensitivity value at a first elapsed time and a second sensitivity value at a second elapsed time after said first elapsed time, said second sensitivity being greater than said first sensitivity.

6. (Original) The method of claim 1 wherein said emitting step includes:
transmitting said light pulse to a polymeric light reflector; and,
reflecting said light pulse outwardly from said light reflector.

7-10 (Cancelled).

11. (Original) A method for detecting an object, comprising:
emitting a plurality of light pulses;
receiving a reflection of said light pulses;
indicating a presence of the object from said received light pulses; and,
adjusting sensitivity of said indicating step based on a travel time of said pulses.

12. (Original) The method of claim 11 wherein said emitting step includes:
transmitting said plurality of light pulses to a polymeric light reflector; and,
reflecting said light pulses outwardly from said light reflector.

13. (Original) A system for detecting an object, comprising:

a light source generating a light pulse, said light pulse being emitted;

a light detector configured to receive a reflection of said pulse; and,

a controller operably connected to said light source and said detector, said controller configured to indicate a presence of the object from said received light pulse, said controller further configured to adjust sensitivity for detecting the object based on an elapsed time from said emission.

14. (Original) The system of claim 13 further comprising a polymeric light reflector receiving said light pulse from said light source and reflecting said light pulse toward the object.

15. (Original) The system of claim 13 wherein said light source comprises a near infrared diode laser.

16. (Original) The system of claim 13 wherein said light detector comprises a near infrared light detector.

17. (Original) The system of claim 13 wherein said sensitivity is adjusted to have a first sensitivity value at a first elapsed time and a second sensitivity value at a second elapsed time after said first elapsed time, said second sensitivity being greater than said first sensitivity.

18. (Previously Presented) An article of manufacture, comprising:

a computer storage medium having a computer program encoded therein for detecting an object, said computer storage medium comprising:

code for inducing a light transmitter to emit a light pulse;

code for storing values indicative of a reflection of said light pulse;

code for indicating a presence of the object from said stored values; and,

code for adjusting sensitivity for detecting the object based on elapsed time from said emission.

19. (Previously Presented) A method for detecting an object, the method comprising:

emitting a light pulse;

receiving a reflection of the light pulse; and

indicating presence of the object when a power level of the received light pulse exceeds a signal threshold that decreases based on elapsed time from the emission.

20. (Previously Presented) A method for detecting an object, the method comprising:

emitting a light pulse;

receiving a reflection of the light pulse;

indicating presence of the object when a power level of the received light pulse multiplied by a signal gain that increases with elapsed time from emission is greater than a detection threshold.

(ix) EVIDENCE APPENDIX

Appellants rely upon the instant application including the specification, drawings, and claims and the prior art applied by the Examiner.

(x) RELATED PROCEEDINGS APPENDIX

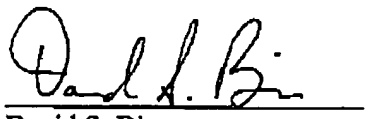
No decision has been rendered in any proceedings related to this appeal.

SUMMARY

For the reasons above, Applicants respectfully submit that the rejections of claims 1, 2, 5, 6, and 11-20 should be reversed, that all formal and substantive requirements for patentability have been met, and that this case is in condition for allowance, which action is respectfully requested.

An additional fee of **$500.00** is believed to be due for filing of this appeal brief for a large entity. Please charge this fee and any other fee deemed necessary, or apply any credit to **Deposit Account 06-1510** (Ford Global Technologies, LLC). If there are insufficient funds in this account, please charge the fees to Deposit Account No. 06-1505.

Respectfully submitted,



David S. Bir
Registration No. 38,383

Date: March 31, 2005

Bir Law, PLC
45094 Middlebury Ct.
Canton, MI 48188-3215
734-981-5646
Fax: (734) 468-4257